

FCC PART 15.407

TEST REPORT

For

Shenzhen Lenkeng Technology Co., Ltd

West 4F, Jinguangxia Culture&Tech Park, 3 Guangxia Road, Shenzhen, 518049 China

FCC ID: 2ADXC16WA88

Report Type: Original Report	Product Type: Wireless Extender
Test Engineer: <u>Hill He</u>	<i>HYM He</i>
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Reviewed By: <u>Jimmy Xiao</u> RF Engineer	<i>Jimmy xiao</i>
Prepared By: Bay Area Compliance Laboratories Corp. (Shenzhen) 6/F, the 3rd Phase of WanLi Industrial Building ShiHua Road, FuTian Free Trade Zone Shenzhen, Guangdong, China Tel: +86-755-33320018 Fax: +86-755-33320008 www.baclcorp.com.cn	

Note: This test report is prepared for the customer shown above and for the device described herein. It may not be duplicated or used in part without prior written consent from Bay Area Compliance Laboratories Corp.

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GENERAL INFORMATION

Product Description for Equipment under Test (EUT)

The *Shenzhen Lenkeng Technology Co., Ltd*'s product, model number: *LKV388A (FCC ID: 2ADXC16WA88)* or the "EUT" in this report was a *Wireless Extender*, which was measured approximately: 19.5 cm (L) x 13.8 cm (W) x 3.1 cm(H), rated with input voltage: DC 5.0V from adapter.

Adapter information:

Model: NBS24J050300HU

Input: 100-240V~50/60 Hz, 0.6A

Output: DC 5.0V, 3.0A

Note: The series product, model LKV388A, LKV388, LKV688-200M, LKV388SDI, LKV388VGA and LKV388DVI have the same or similar appearance, structure, PCB, Material and function. Model LKV388A was selected for fully testing. The detailed information can be referred to the attached declaration letter which was stated and guaranteed by the applicant.

** All measurement and test data in this report was gathered from production sample serial number: 1511017 (Assigned by BACL, Shenzhen). The EUT supplied by the applicant was received on 2015-11-20.*

Objective

This type approval report is prepared on behalf of *Shenzhen Lenkeng Technology Co., Ltd* in accordance with Part 2-Subpart J, Part 15-Subparts A, B and E of the Federal Communication Commissions rules.

The tests were performed in order to determine compliance with FCC Part 15, Subpart E, section 15.203, 15.205, 15.207, 15.209 and 15.407 rules.

Related Submittal(s)/Grant(s)

No related submittal(s).

Test Methodology

All measurements contained in this report were conducted with ANSI C63.10-2013, American National Standard of Procedures for Compliance Testing of Unlicensed Wireless Devices

All emissions measurement was performed and Bay Area Compliance Laboratories Corp. (Shenzhen). The radiated testing was performed at an antenna-to-EUT distance of 3 meters.

Measurement uncertainty with RF radiated emission is 5.81 dB for 30MHz-1GHz.and 4.88 dB for above 1GHz, 1.95dB for conducted measurement.

Test Facility

The test site used by Bay Area Compliance Laboratories Corp. (Shenzhen) to collect test data is located on the 6/F, the 3rd Phase of WanLi Industrial Building, ShiHua Road, FuTian Free Trade Zone Shenzhen, Guangdong, China.

Test site at Bay Area Compliance Laboratories Corp. (Shenzhen) has been fully described in reports submitted to the Federal Communication Commission (FCC). The details of these reports have been found to be in compliance with the requirements of Section 2.948 of the FCC Rules on October 31, 2013. The facility also complies with the radiated and AC line conducted test site criteria set forth in ANSI C63.10-2013.

The Federal Communications Commission has the reports on file and is listed under FCC Registration No.: 382179. The test site has been approved by the FCC for public use and is listed in the FCC Public Access Link (PAL) database.

SYSTEM TEST CONFIGURATION

Description of Test Configuration

The system was configured for testing in an engineering mode, which was provided by manufacturer.

EUT Exercise Software

N/A

Equipment Modifications

No modification was made to the EUT tested.

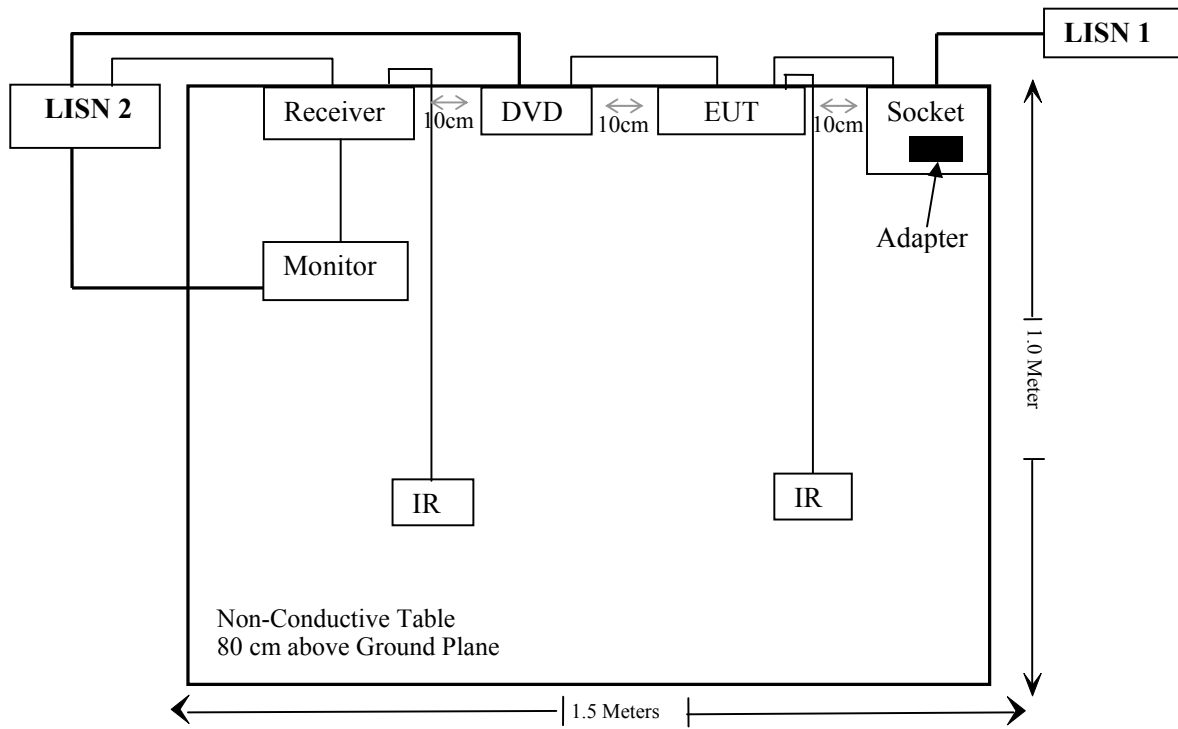
Support Equipment List and Details

Manufacturer	Description	Model	Serial Number
Bull	Socket	N/A	N/A
PHILIPS	DVD	DVP5986K/93	KX1A0712545698
SANSUNG	Monitor	225MS	CR22HV2P401073M
Lenkeng	Receiver	LKV388A	N/A

External I/O Cable

Cable Description	Length (m)	From/Port	To
Un-shielding Un-detachable AC Cable	1.0	Socket	LISN 1
Un-shielding Un-detachable DC Cable	1.5	EUT	Adapter
Shielding Detachable HDMI Cable	1.0	EUT	DVD
Un-shielding Un-detachable Singal Cable	1.0	Receiver	IR
Un-shielding Un-detachable Singal Cable	1.0	EUT	IR
Un-shielding Detachable AC Cable	1.2	DVD	LISN 2
Un-shielding Un-detachable DC Cable	1.5	Receiver	LISN 2
Un-shielding Detachable AC Cable	1.5	Monitor	LISN 2
Shielding Detachable HDMI Cable	1.0	Monitor	Receiver

Block Diagram of Test Setup



SUMMARY OF TEST RESULTS

FCC Rules	Description of Test	Result
§15.407 (f), §2.1091	Maximum Permissible Exposure (MPE)	Compliance
§15.203	Antenna Requirement	Compliance
§15.407(b)(6)& §15.207(a)	Conducted Emissions	Compliance
§15.205& §15.209 &§15.407(b) (1),(6),(7)	Undesirable Emission& Restricted Bands	Compliance
§15.407(a) (1)	26 dB Emission Bandwidth	Compliance
§15.407(a)(1)	Conducted Transmitter Output Power	Compliance
§15.407 (a)(1)	Power Spectral Density	Compliance

FCC §15.407 (f) & §2.1091 –MAXIMUM PERMISSIBLE EXPOSURE (MPE)

Applicable Standard

According to FCC §2.1091 and §1.1307(b) (1), systems operating under the provisions of this section shall be operated in a manner that ensure that the public is not exposed to radio frequency energy level in excess of the Commission’s guideline.

Limits for Maximum Permissible Exposure (MPE) (§1.1310, §2.1091)

(B) Limits for General Population/Uncontrolled Exposure				
Frequency Range (MHz)	Electric Field Strength (V/m)	Magnetic Field Strength (A/m)	Power Density (mW/cm ²)	Averaging Time (minutes)
0.3–1.34	614	1.63	*(100)	30
1.34–30	824/f	2.19/f	*(180/f ²)	30
30–300	27.5	0.073	0.2	30
300–1500	/	/	f/1500	30
1500–100,000	/	/	1.0	30

f = frequency in MHz; * = Plane-wave equivalent power density;

According to §1.1310 and §2.1091 RF exposure is calculated.

Calculated Formulary:

Predication of MPE limit at a given distance

$S = PG/4\pi R^2$ = power density (in appropriate units, e.g. mW/cm²);

P = power input to the antenna (in appropriate units, e.g., mW);

G = power gain of the antenna in the direction of interest relative to an isotropic radiator, the power gain factor, is normally numeric gain;

R = distance to the center of radiation of the antenna (appropriate units, e.g., cm);

Calculated Data:

Frequency (MHz)	Antenna Gain		Turn-up Conducted Power		Evaluation Distance (m)	Power Density (mW/cm ²)	MPE Limit (mW/cm ²)
	(dBi)	(numeric)	(dBm)	(mW)			
5200	5.0	3.16	16.50	44.67	0.2	0.028	1.0

Note: To maintain compliance with the FCC’s RF exposure guidelines, place the equipment at least 20cm from nearby persons.

Result: Compliance

FCC §15.203 – ANTENNA REQUIREMENT

Applicable Standard

According to § 15.203, an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this section. The manufacturer may design the unit so that a broken antenna can be replaced by the user, but the user of a standard antenna jack or electrical connector is prohibited. The structure and application of the EUT were analyzed to determine compliance with section §15.203 of the rules. §15.203 state that the subject device must meet the following criteria:

- a. Antenna must be permanently attached to the unit.
- b. Antenna must use a unique type of connector to attach to the EUT.

Unit must be professionally installed, and installer shall be responsible for verifying that the correct antenna is employed with the unit.

And according to FCC 47 CFR section 15.407 (a), if the transmitting antennas of directional gain greater than 6dBi are used, the transmit power and power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

Antenna Connector Construction

The EUT has a RP-SMA antenna connector which the maximum gain is 5dBi, fulfill the requirement of this section, and please refer to the EUT photo.

Result: Compliance.

FCC §15.407 (b) (6) §15.207 (a) – CONDUCTED EMISSIONS

Applicable Standard

FCC §15.207, §15.407(b) (6)

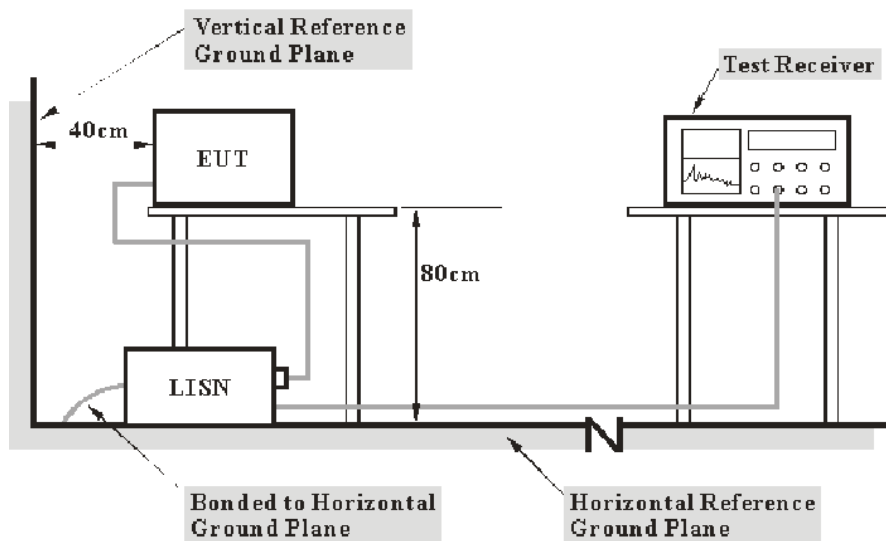
Measurement Uncertainty

Input quantities to be considered for conducted disturbance measurements maybe receiver reading, attenuation of the connection between LISN and receiver, LISN voltage division factor, LISN VDF frequency interpolation and receiver related input quantities, etc.

Based on CISPR 16-4-2:2011, the expanded combined standard uncertainty of conducted disturbance test at Bay Area Compliance Laboratories Corp. (Shenzhen) is shown as below. And the uncertainty will not be taken into consideration for the test data recorded in the report

Port	Expanded Measurement uncertainty
AC Mains	3.54 dB (k=2, 95% level of confidence)
CAT 3	3.72 dB (k=2, 95% level of confidence)
CAT 5	3.74 dB (k=2, 95% level of confidence)
CAT 6	4.54 dB (k=2, 95% level of confidence)

EUT Setup



- Note: 1. Support units were connected to second LISN.
 2. Both of LISNs (AMN) 80 cm from EUT and at the least 80 cm from other units and other metal planes support units.

The setup of EUT is according with per ANSI C63.10-2013 measurement procedure. The specification used was with the FCC Part 15.207 limits.

The spacing between the peripherals was 10 cm.

EMI Test Receiver Setup

The EMI test receiver was set to investigate the spectrum from 150 kHz to 30 MHz.

During the conducted emission test, the EMI test receiver was set with the following configurations:

Frequency Range	IF B/W
150 kHz – 30 MHz	9 kHz

Test Procedure

During the conducted emission test, the adapter was connected to the LISN.

Maximizing procedure was performed on the six (6) highest emissions of the EUT.

All final data was recorded in the Quasi-peak and average detection mode.

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Rohde & Schwarz	EMI Test Receiver	ESCS30	100176	2015-06-03	2016-06-03
Rohde & Schwarz	LISN	ESH2-Z5	892107/021	2015-06-09	2016-06-09
Rohde & Schwarz	LISN	ENV216	3560.6650.12-101613-Yb	2015-06-09	2016-06-09
Rohde & Schwarz	Transient Limitor	ESH3Z2	DE25985	2015-05-14	2016-05-14
Rohde & Schwarz	CE Test software	EMC 32	V8.53	NCR	NCR

* **Statement of Traceability:** Bay Area Compliance Laboratories Corp. (Shenzhen) attests that all calibrations have been performed in accordance to requirements that traceable to National Primary Standards and International System of Units (SI).

Test Results Summary

According to the recorded data in following table, the EUT complied with the FCC Part 15.207, the worst margin reading as below:

10.0 dB at 1.877470 MHz in the Line conducted mode

Refer to CISPR16-4-2:2011 and CISPR 16-4-1:2009, the measured level complies with the limit if

$$L_m + U_{(Lm)} \leq L_{lim} + U_{cispr}$$

In BACL, $U_{(Lm)}$ is less than U_{cispr} , if L_m is less than L_{lim} , it implies that the EUT complies with the limit.

Test Data

Environmental Conditions

Temperature:	24 °C
Relative Humidity:	50 %
ATM Pressure:	101.0 kPa

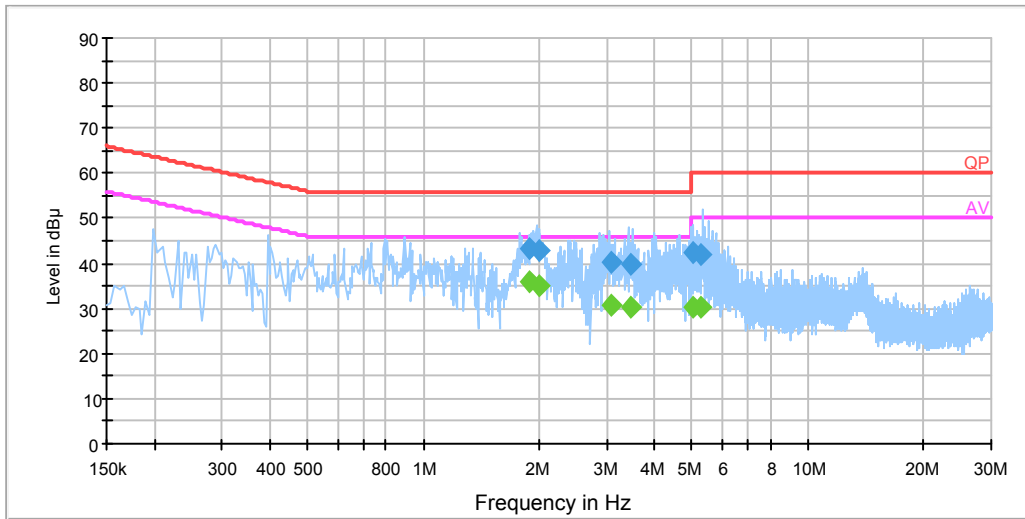
The testing was performed by Hill He on 2015-12-29.

EUT operation mode: Transmitting (worst case)

Pre-scan with all the six models, the worst case is from the model: LKV388A.

AC 120V/60 Hz, Line:

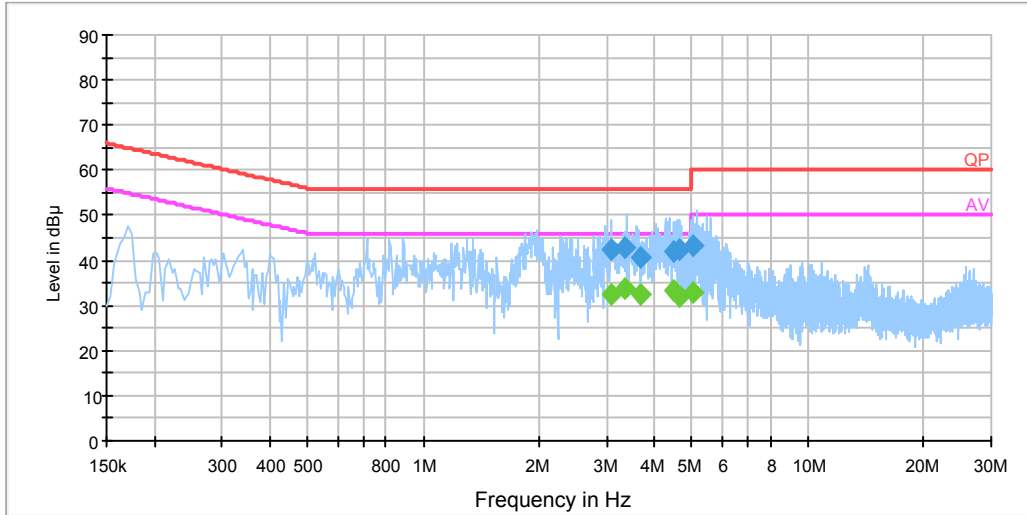
EMI Auto Test L



Frequency (MHz)	Corrected Amplitude (dBµV)	Correction Factor (dB)	Limit (dBµV)	Margin (dB)	Detector (PK/Ave./QP)
1.877470	43.5	20.0	56.0	12.5	QP
1.877470	36.0	20.0	46.0	10.0	Ave.
1.999550	42.7	20.0	56.0	13.3	QP
1.999550	35.2	20.0	46.0	10.8	Ave.
3.084130	40.4	20.0	56.0	15.6	QP
3.084130	30.6	20.0	46.0	15.4	Ave.
3.454910	39.6	20.0	56.0	16.4	QP
3.454910	30.5	20.0	46.0	15.5	Ave.
5.031570	42.3	20.0	60.0	17.7	QP
5.031570	30.3	20.0	50.0	19.7	Ave.
5.246290	42.0	20.0	60.0	18.0	QP
5.246290	30.2	20.0	50.0	19.8	Ave.

AC120V, 60 Hz, Neutral:

EMI Auto Test N



Frequency (MHz)	Corrected Amplitude (dBµV)	Correction Factor (dB)	Limit (dBµV)	Margin (dB)	Detector (PK/Ave./QP)
3.095950	42.4	20.0	56.0	13.6	QP
3.095950	32.7	20.0	46.0	13.3	Ave.
3.355090	42.6	20.0	56.0	13.4	QP
3.355090	33.7	20.0	46.0	12.3	Ave.
3.679430	40.5	20.0	56.0	15.5	QP
3.679430	32.3	20.0	46.0	13.7	Ave.
4.452090	41.8	20.0	56.0	14.2	QP
4.452090	33.5	20.0	46.0	12.5	Ave.
4.612550	42.3	20.0	56.0	13.7	QP
4.612550	31.8	20.0	46.0	14.2	Ave.
5.027330	43.4	20.0	60.0	16.6	QP
5.027330	33.1	20.0	50.0	16.9	Ave.

Note:

- 1) Correction Factor = LISN VDF (Voltage Division Factor) + Cable Loss + Transient Limiter Attenuation
- 2) Corrected Amplitude = Reading + Correction Factor
- 3) Margin = Limit - Corrected Amplitude

§15.205 & §15.209 & §15.407(B) (1),(6),(7) – UNDESIRABLE EMISSION

Applicable Standard

FCC §15.407 (b) (1),(6), (7); §15.209; §15.205;

For transmitters operating in the 5.15–5.25 GHz band: all emissions outside of the 5.15–5.35 GHz band shall not exceed an EIRP of –27 dBm/MHz.

Unwanted emissions below 1 GHz must comply with the general field strength limits set forth in §15.209.

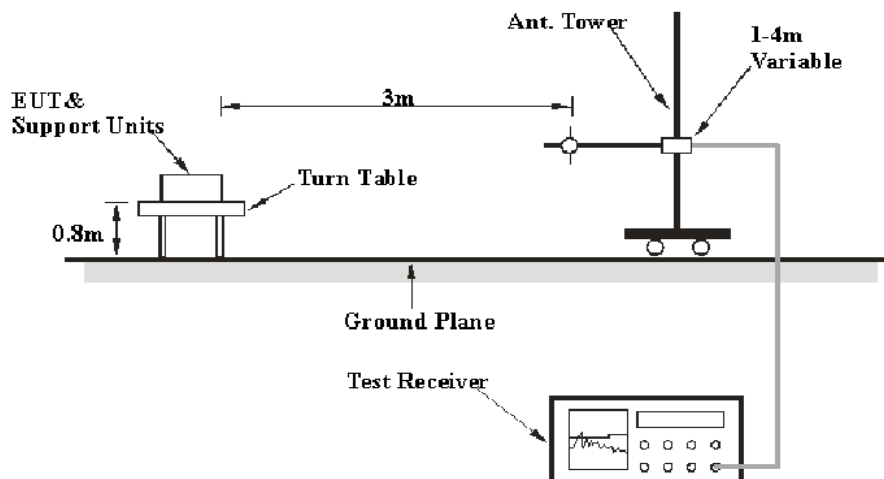
Measurement Uncertainty

All measurements involve certain levels of uncertainties, especially in field of EMC. The factors contributing to uncertainties are spectrum analyzer, cable loss, antenna factor calibration, antenna directivity, antenna factor variation with height, antenna phase center variation, antenna factor frequency interpolation, measurement distance variation, site imperfections, mismatch (average), and system repeatability.

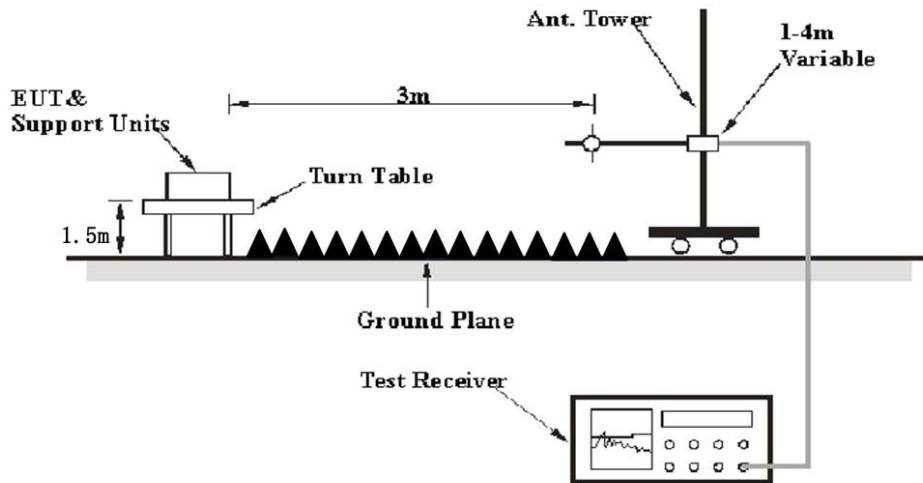
Based on CISPR 16-4-2:2011, the expanded combined standard uncertainty of radiation emissions at Bay Area Compliance Laboratories Corp. (Shenzhen) is 5.81 dB for 30MHz-1GHz and 4.88 dB for above 1GHz, 1.95dB for conducted measurement at antenna port. And the uncertainty will not be taken into consideration for the test data recorded in the report.

EUT Setup

Below 1 GHz:



Above 1 GHz:



The setup of EUT is according with per ANSI C63.10-2013 measurement procedure. The specification used was with the FCC 15.209 and FCC 15.407 limits.

The external I/O cables were draped along the test table and formed a bundle 30 to 40 cm long in the middle.

EMI Test Receiver & Spectrum Analyzer Setup

The system was investigated from 30 MHz to 40 GHz.

During the radiated emission test, the EMI test receiver & Spectrum Analyzer Setup were set with the following configurations:

Frequency Range	RBW	Video B/W	IF B/W	Detector
30 MHz – 1000 MHz	100 kHz	300 kHz	120 kHz	QP
Above 1 GHz	1 MHz	3 MHz	/	PK
	1 MHz	10 Hz	/	Ave.

Test Procedure

Radiated Spurious Emission

During the radiated emission test, the adapter was connected to the AC floor outlet.

Maximizing procedure was performed on the highest emissions to ensure that the EUT complied with all the installation combinations.

Data was recorded in Quasi-peak detection mode for frequency range of 30 MHz-1GHz, peak and Average detection modes for frequencies above 1GHz.

The EUT is set 1.5 meter away from the testing antenna, which is varied from 1-4 mete, and the EUT is placed on a turntable, the table shall be rotated for 360 degrees to find out the highest emission. The receiving antenna should be changed the polarization both of horizontal and vertical.

Corrected Amplitude & Margin Calculation

The Corrected Amplitude is calculated by adding the Antenna Factor and Cable Loss, and subtracting the Amplifier Gain from the Meter Reading. The basic equation is as follows:

$$\text{Corrected Amplitude} = \text{Meter Reading} + \text{Antenna Factor} + \text{Cable Loss} - \text{Amplifier Gain}$$

The “**Margin**” column of the following data tables indicates the degree of compliance with the applicable limit. For example, a margin of 7dB means the emission is 7dB below the limit. The equation for margin calculation is as follows:

$$\text{Margin} = \text{Limit} - \text{Corrected Amplitude}$$

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
HP	Amplifier	HP8447E	1937A01046	2015-05-06	2016-05-06
Rohde & Schwarz	EMI Test Receiver	ESCI	101122	2015-11-03	2016-11-03
Sunol Sciences	Bi-log Antenna	JB1	A040904-2	2014-12-07	2017-12-06
Mini	Amplifier	ZVA-183-S+	5969001149	2015-04-23	2016-04-23
A.H. System	Horn Antenna	SAS-200/571	135	2013-02-11	2016-02-10
Rohde & Schwarz	Signal Analyzer	FSIQ26	8386001028	2015-12-11	2016-12-11
DUCOMMUN	Pre-amplifier	ALN-22093530-01	991373-01	2015-12-02	2016-12-01
Agilent	Spectrum Analyzer	8564E	3943A01781	2013-05-09	2016-05-08
the electro-Mechanics Co.	Horn Antenna	3116	9510-2270	2013-10-14	2016-10-13

* **Statement of Traceability:** Bay Area Compliance Laboratories Corp. (Shenzhen) attests that all calibrations have been performed in accordance to requirements that traceable to National Primary Standards and International System of Units (SI).

Test Results Summary

According to the recorded data in following table, the EUT complied with the FCC Title 47, Part 15, Subpart C, Section 15.205, 15.209 and 15.407, the worst margin reading as below:

0.33 dB at 5397.940 MHz in the Vertical polarization

Refer to CISPR16-4-2:2011 and CISPR 16-4-1:2009, the measured level is in compliance with the limit if

$$L_m + U_{(L_m)} \leq L_{lim} + U_{cispr}$$

In BAEL, $U_{(L_m)}$ is less than U_{cispr} , if L_m is less than L_{lim} , it implies that the EUT complies with the limit.

Test Data

Environmental Conditions

Temperature:	23 °C
Relative Humidity:	49 %
ATM Pressure:	101.0 kPa

The testing was performed by Hill He on 2015-12-24.

EUT operation mode: Transmitting (worst case)

Pre-scan with all the six models, the worst case is from the model: LKV388A.

30 MHz ~ 40 GHz:

Frequency (MHz)	Receiver		Turntable Degree	Rx Antenna		Corrected Factor (dB)	Corrected Amplitude (dBµV/m)	FCC Part 15.407/205/209	
	Reading (dBµV)	Detector (PK/QP/Ave.)		Height (m)	Polar (H/V)			Limit (dBµV/m)	Margin (dB)
5180 MHz									
265.7	44.29	QP	115	1.2	H	-13.7	30.59	46	15.41
5180.00	100.31	PK	132	2.4	H	2.29	102.60	/	/
5180.00	89.04	Ave.	132	2.4	H	2.29	91.33	/	/
5180.00	107.51	PK	36	1.5	V	2.29	109.80	/	/
5180.00	96.42	Ave.	36	1.5	V	2.29	98.71	/	/
5397.94	63.62	PK	16	1.8	V	1.74	65.36	74	8.64
5397.94	51.93	Ave.	16	1.8	V	1.74	53.67	54	0.33
7006.42	46.41	PK	353	1.8	V	8.14	54.55	74	19.45
7006.42	28.41	Ave.	353	1.8	V	8.14	36.55	54	17.45
7513.56	45.41	PK	305	1.5	V	9.87	55.28	74	18.72
7513.56	27.26	Ave.	305	1.5	V	9.87	37.13	54	16.87
10360.00	45.17	PK	338	2.0	V	13.75	58.92	74	15.08
10360.00	27.15	Ave.	338	2.0	V	13.75	40.90	54	13.10
15540.00	46.39	PK	113	1.2	V	17.86	64.25	74	9.75
15540.00	31.29	Ave.	113	1.2	V	17.86	49.15	54	4.85

Frequency (MHz)	Receiver		Turntable Degree	Rx Antenna		Corrected Factor (dB)	Corrected Amplitude (dBµV/m)	FCC Part 15.407/205/209	
	Reading (dBµV)	Detector (PK/QP/Ave.)		Height (m)	Polar (H/V)			Limit (dBµV/m)	Margin (dB)
5200 MHz									
265.7	44.22	QP	115	1.2	H	-13.7	30.52	46	15.48
5200.00	99.89	PK	53	2.4	H	2.29	102.18	/	/
5200.00	88.65	Ave.	53	2.4	H	2.29	90.94	/	/
5200.00	107.51	PK	108	1.5	V	2.29	109.80	/	/
5200.00	96.87	Ave.	108	1.5	V	2.29	99.16	/	/
5148.51	61.75	PK	286	1.4	V	1.75	63.50	74	10.50
5148.51	48.28	Ave.	286	1.4	V	1.75	50.03	54	3.97
5399.89	62.13	PK	301	2.0	V	1.74	63.87	74	10.13
5399.89	51.26	Ave.	301	2.0	V	1.74	53.00	54	1.00
7531.35	42.77	PK	137	1.5	V	9.87	52.64	74	21.36
7531.35	25.10	Ave.	137	1.5	V	9.87	34.97	54	19.03
7536.91	44.89	PK	207	1.9	V	9.87	54.76	74	19.24
7536.91	24.75	Ave.	207	1.9	V	9.87	34.62	54	19.38
10400.00	40.61	PK	114	1.2	V	13.75	54.36	74	19.64
10400.00	26.40	Ave.	114	1.2	V	13.75	40.15	54	13.85

Frequency (MHz)	Receiver		Turntable Degree	Rx Antenna		Corrected Factor (dB)	Corrected Amplitude (dBµV/m)	FCC Part 15.407/205/209	
	Reading (dBµV)	Detector (PK/QP/Ave.)		Height (m)	Polar (H/V)			Limit (dBµV/m)	Margin (dB)
5240 MHz									
265.7	44.19	QP	115	1.2	H	-13.7	30.49	46	15.51
5240.00	100.52	PK	158	2.5	H	2.29	102.81	/	/
5240.00	89.35	Ave.	158	2.5	H	2.29	91.64	/	/
5240.00	105.96	PK	261	1.5	V	2.29	108.25	/	/
5240.00	95.15	Ave.	261	1.5	V	2.29	97.44	/	/
5143.36	58.01	PK	72	1.1	V	1.75	59.76	74	14.24
5143.36	46.36	Ave.	72	1.1	V	1.75	48.11	54	5.89
7510.37	45.16	PK	283	2.0	V	9.87	55.03	74	18.97
7510.37	26.52	Ave.	283	2.0	V	9.87	36.39	54	17.61
7513.33	45.26	PK	351	1.5	V	9.87	55.13	74	18.87
7513.33	27.44	Ave.	351	1.5	V	9.87	37.31	54	16.69
10480.00	40.45	PK	16	1.2	V	13.75	54.20	74	19.80
10480.00	25.02	Ave.	16	1.2	V	13.75	38.77	54	15.23
15720.00	49.39	PK	24	1.2	V	17.86	67.25	74	6.75
15720.00	31.85	Ave.	24	1.2	V	17.86	49.71	54	4.29

Band Edge

Frequency (MHz)	Receiver		Turntable Degree	Rx Antenna		Corrected Factor (dB)	Corrected Amplitude (dBµV/m)	FCC Part 15.407/205/209	
	Reading (dBµV)	Detector (PK/QP/Ave.)		Height (m)	Polar (H/V)			Limit (dBµV/m)	Margin (dB)
Low channel									
5149.50	65.84	PK	216	1.7	V	2.29	68.13	74	5.87
5149.50	49.04	Ave.	216	1.7	V	2.29	51.33	54	2.67
High channel									
5360.12	60.17	PK	267	2.4	V	1.74	61.91	74	12.09
5360.12	49.39	Ave.	267	2.4	V	1.74	51.13	54	2.87

Note:

Corrected Amplitude = Corrected Factor + Reading

Corrected Factor=Antenna factor (RX) + Cable Loss – Amplifier Factor

Margin = Limit- Corr. Amplitude

FCC §15.407(a) (1) – 26 dB EMISSION BANDWIDTH

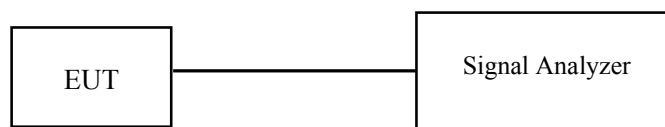
Applicable Standard

The maximum power spectral density is measured as a conducted emission by direct connection of a calibrated test instrument to the equipment under test. If the device cannot be connected directly, alternative techniques acceptable to the Commission may be used. Measurements in the 5.725-5.85 GHz band are made over a reference bandwidth of 500 kHz or the 26 dB emission bandwidth of the device, whichever is less. Measurements in the 5.15-5.25 GHz, 5.25-5.35 GHz, and the 5.47-5.725 GHz bands are made over a bandwidth of 1 MHz or the 26 dB emission bandwidth of the device, whichever is less. A narrower resolution bandwidth can be used, provided that the measured power is integrated over the full reference bandwidth.

Test Procedure

1. Emission Bandwidth (EBW)

- a) Set RBW = approximately 1% of the emission bandwidth.
- b) Set the VBW > RBW.
- c) Detector = Peak.
- d) Trace mode = max hold.
- e) Measure the maximum width of the emission that is 26 dB down from the maximum of the emission. Compare this with the RBW setting of the analyzer. Readjust RBW and repeat measurement as needed until the RBW/EBW ratio is approximately 1%.



Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Rohde & Schwarz	Signal Analyzer	FSIQ26	8386001028	2015-12-11	2016-12-11

* Statement of Traceability: Bay Area Compliance Laboratories Corp. (Shenzhen) attests that all calibrations have been performed in accordance to requirements, traceable to National Primary Standards and International System of Units (SI).

Test Data

Environmental Conditions

Temperature:	23 °C
Relative Humidity:	50 %
ATM Pressure:	101.0 kPa

The testing was performed by Hill He on 2015-12-11.

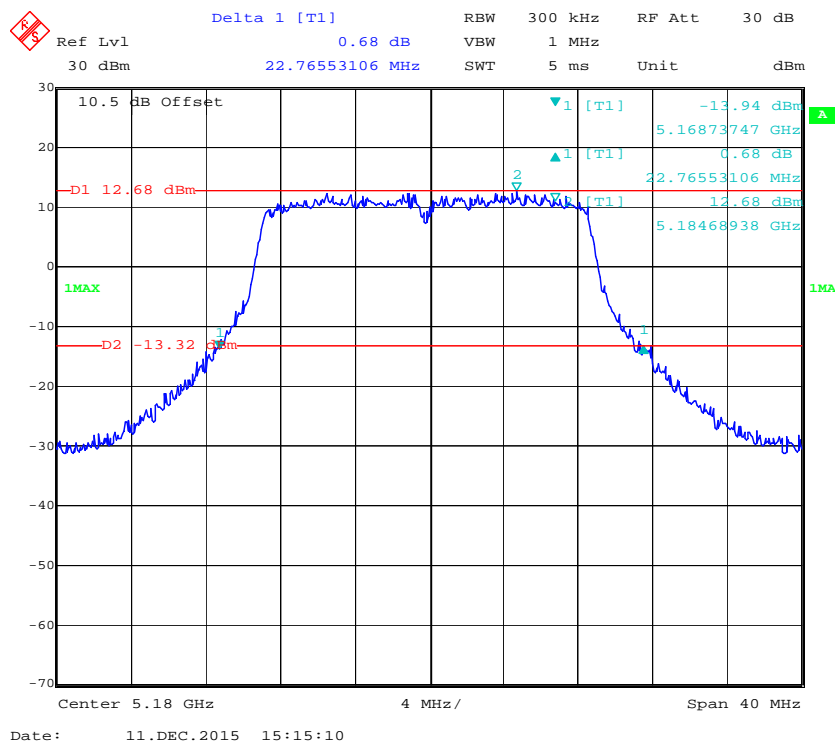
EUT operation mode: Transmitting

Test Result: Pass, please refer to the following tables and plots.

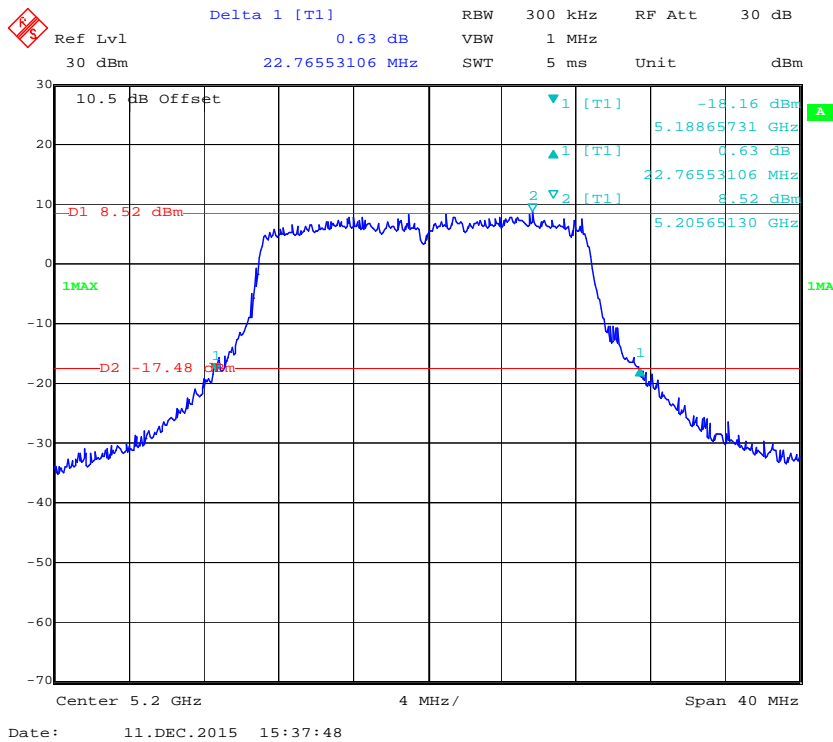
802.11n20 mode

Frequency (MHz)	26dB Emission Bandwidth (MHz)
5180	22.77
5200	22.77
5240	22.61

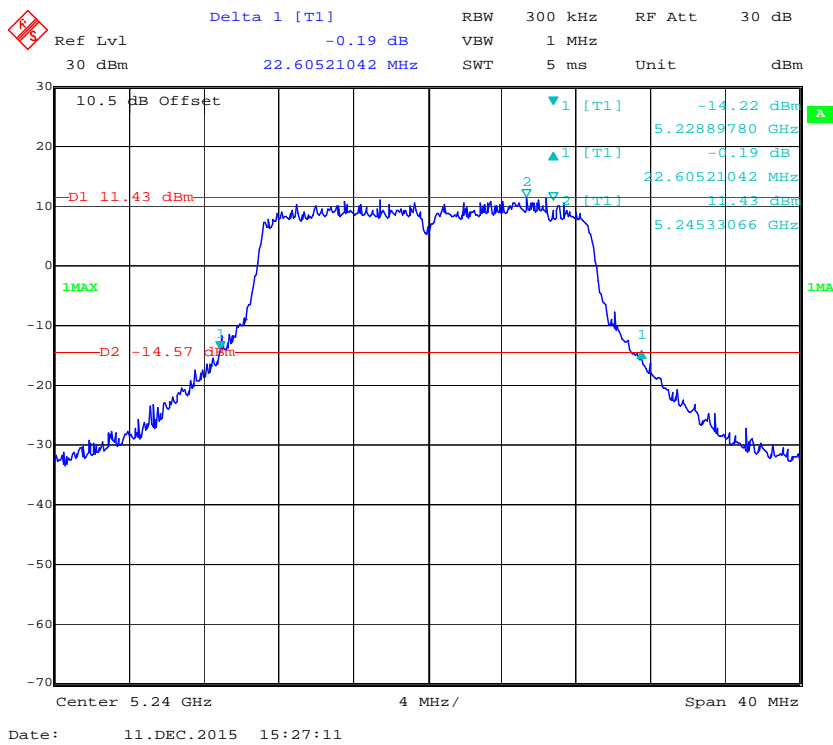
802.11n20 mode, 26dB Emission Bandwidth, 5180 MHz



802.11n20 mode, 26dB Emission Bandwidth, 5200 MHz



802.11n20 mode, 26dB Emission Bandwidth, 5240 MHz



FCC §15.407(a) (1) – CONDUCTED TRANSMITTER OUTPUT POWER

Applicable Standard

For an indoor access point operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W provided the maximum antenna gain does not exceed 6 dBi. In addition, the maximum power spectral density shall not exceed 17 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

Test Procedure

Set span to encompass the entire EBW (or, alternatively, the entire 99% occupied bandwidth) of the signal.

(ii) Set RBW = 1 MHz.

(iii) Set VBW \geq 3 MHz.

(iv) Number of points in sweep \geq 2 Span / RBW. (This ensures that bin-to-bin spacing is \leq RBW/2, so that narrowband signals are not lost between frequency bins.)

(v) Manually set sweep time \geq 10 * (number of points in sweep) * (symbol period of the transmitted signal), but not less than the automatic default sweep time.

(vi) Set detector = RMS.

(vii) The EUT shall be operated at 100 percent duty cycle.

(viii) Perform a single sweep.

(ix) Compute power by integrating the spectrum across the EBW (or, alternatively, the entire 99% occupied bandwidth) of the signal using the instrument's band power measurement function with band limits set equal to the EBW (or occupied bandwidth) band edges. If the instrument does not have a band power function, sum the spectrum levels (in power units) at 1 MHz intervals extending across the EBW (or, alternatively, the entire 99% occupied bandwidth) of the spectrum.

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Rohde & Schwarz	Signal Analyzer	FSIQ26	8386001028	2015-12-11	2016-12-11

* **Statement of Traceability:** Bay Area Compliance Laboratories Corp. (Shenzhen) attests that all calibrations have been performed in accordance to requirements, traceable to National Primary Standards and International System of Units (SI).

Test Data**Environmental Conditions**

Temperature:	23 °C
Relative Humidity:	50 %
ATM Pressure:	101.0 kPa

The testing was performed by Hill He on 2016-01-21.

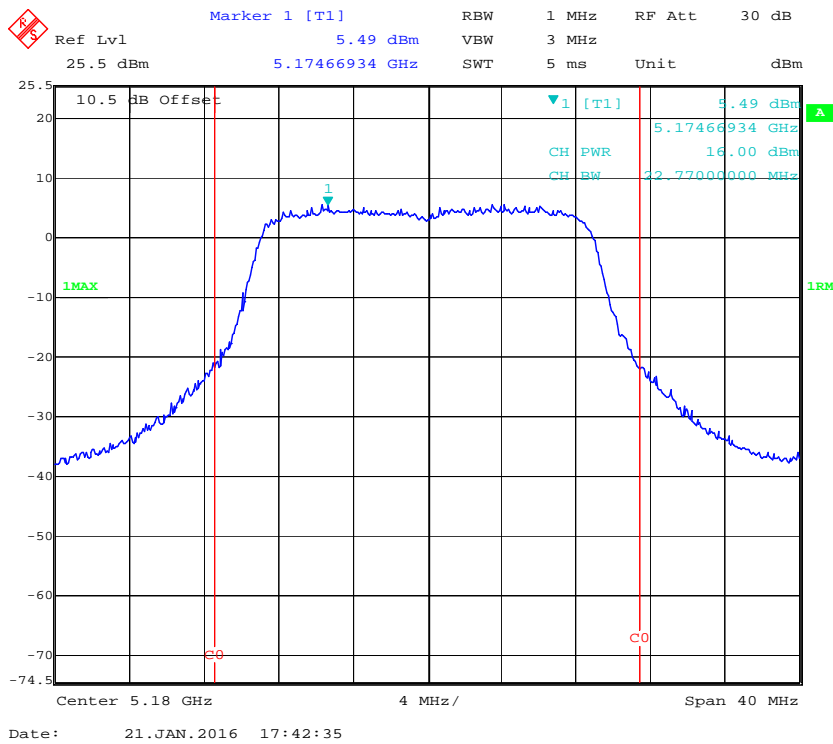
EUT operation mode: Transmitting

Test Result: Pass

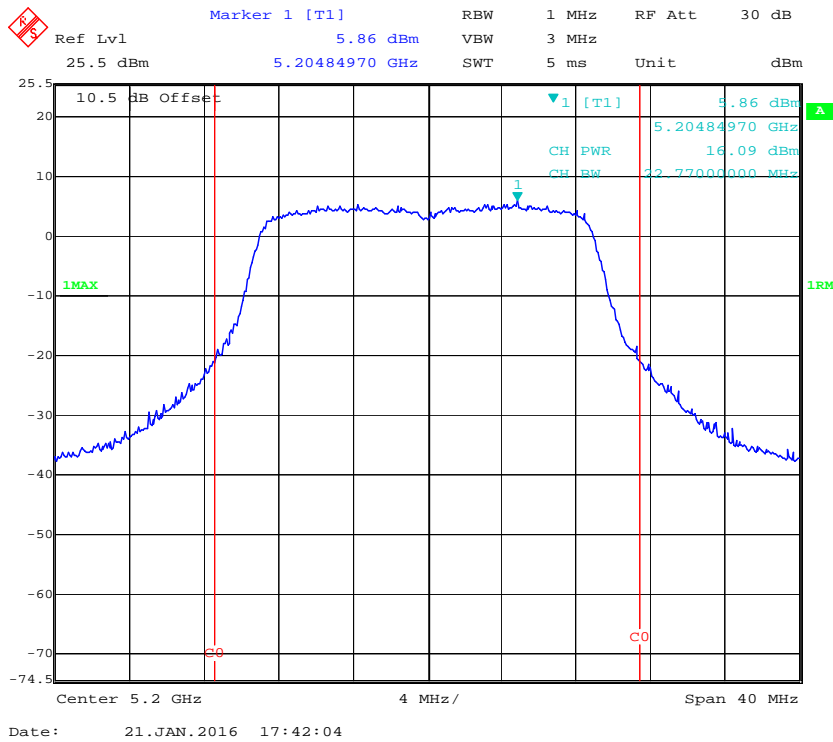
802.11n20 mode

Frequency (MHz)	Output Power (dBm)	Limit (dBm)
5180	16.00	30
5200	16.09	
5240	14.47	

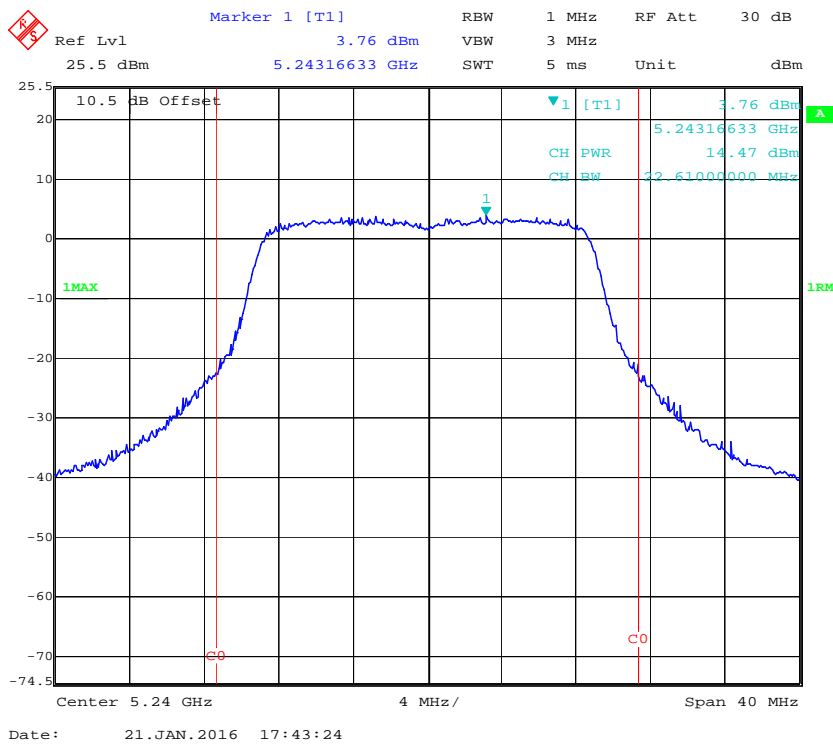
802.11n20 mode, RF Conducted Output Power, 5180 MHz



802.11n20 mode, RF Conducted Output Power, 5200 MHz



802.11n20 mode, RF Conducted Output Power, 5240 MHz



FCC §15.407(a) (1) - POWER SPECTRAL DENSITY

Applicable Standard

For an indoor access point operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W provided the maximum antenna gain does not exceed 6 dBi. In addition, the maximum power spectral density shall not exceed 17 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

Test Procedure

Set span to encompass the entire EBW (or, alternatively, the entire 99% occupied bandwidth) of the signal.

(ii) Set RBW = 1 MHz.

(iii) Set VBW \geq 3 MHz.

(iv) Number of points in sweep \geq 2 Span / RBW. (This ensures that bin-to-bin spacing is \leq RBW/2, so that narrowband signals are not lost between frequency bins.)

(v) Manually set sweep time \geq 10 * (number of points in sweep) * (symbol period of the transmitted signal), but not less than the automatic default sweep time.

(vi) Set detector = RMS.

(vii) The EUT shall be operated at 100 percent duty cycle.

(viii) Perform a single sweep.

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Rohde & Schwarz	Signal Analyzer	FSIQ26	8386001028	2015-12-11	2016-12-11

* **Statement of Traceability:** Bay Area Compliance Laboratories Corp. (Shenzhen) attests that all calibrations have been performed in accordance to requirements, traceable to National Primary Standards and International System of Units (SI).

Test Data

Environmental Conditions

Temperature:	23 °C
Relative Humidity:	50 %
ATM Pressure:	101.0 kPa

The testing was performed by Hill He on 2016-01-21.

EUT operation mode: Transmitting

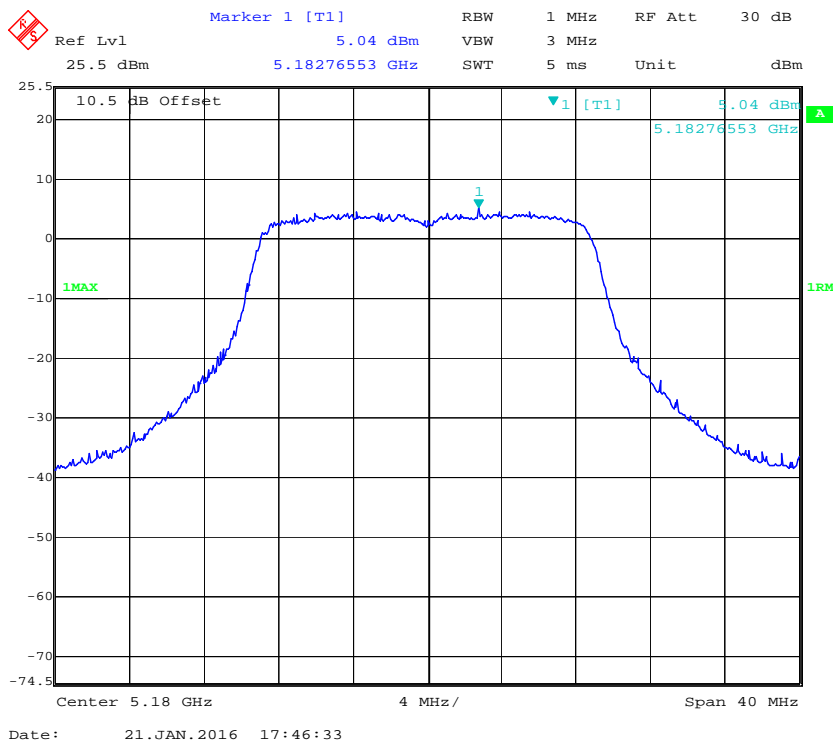
Test Result: Pass

Please refer to the following tables and plots.

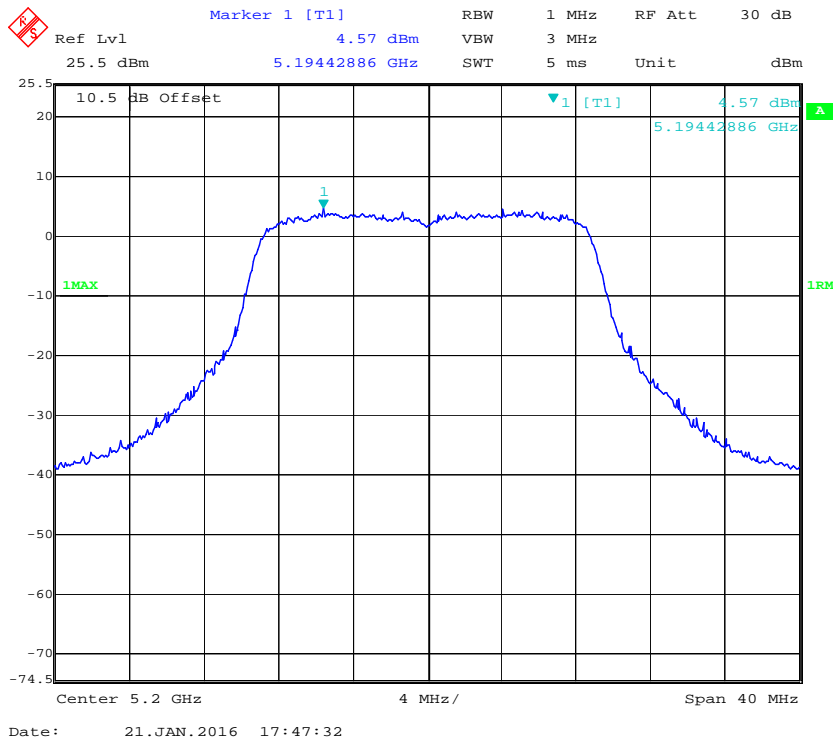
802.11n20 Mode

Frequency (MHz)	Power Spectral Density (dBm/MHz)	Limit (dBm/MHz)
5180	5.04	17
5200	4.57	
5240	2.93	

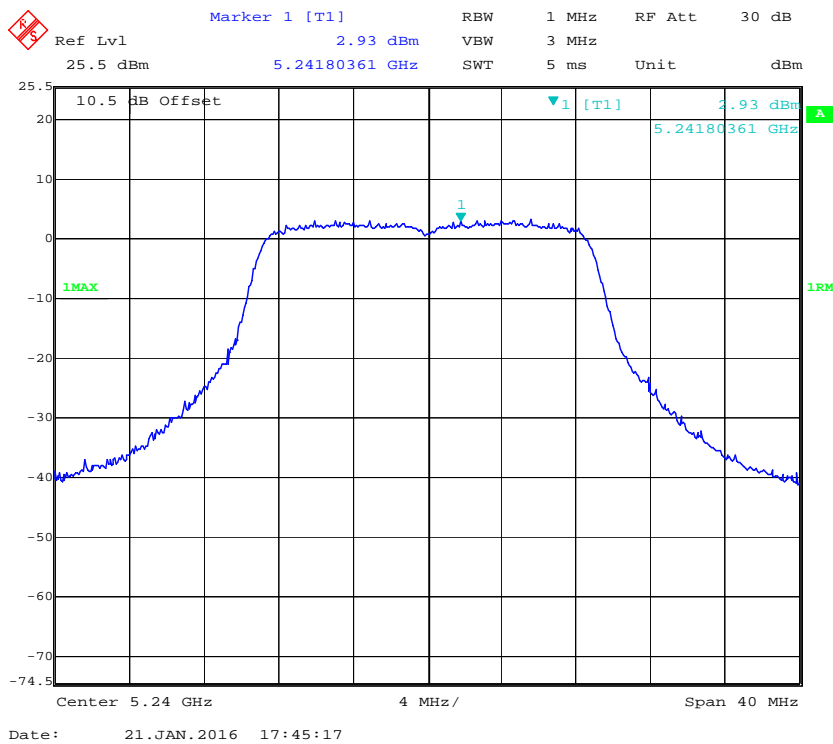
802.11n20 mode, Power Spectral Density, 5180 MHz



802.11n20 mode, Power Spectral Density, 5200 MHz



802.11n20 mode, Power Spectral Density, 5240 MHz



PRODUCT SIMILARITY DECLARATION LETTER



Shenzhen Lenkeng Technology Co.,Ltd

Declaration of Alteration

To Whom It May Concern,

We, Shenzhen Lenkeng Technology Co.,Ltd, hereby declare that there are some differences between our Multiple Models and testing products. Details as below:

Products Description	Name	Wireless Extender	
	Brand	LENKENG	
	Manufacturer	Shenzhen Lenkeng Technology Co.,Ltd	
Differences Description			
Testing Products	Multiple Models	Differences Items	Details
LKV388A	LKV688-200M	Support highest resolution	LKV388A:1080p@60Hz LKV688-200M:4K×2K@30Hz
	LKV388VGA	Interface	LKV388A:HDMI LKV388VGA: VGA
	LKV388SDI	Interface	LKV388A:HDMI LKV388SDI: SDI
	LKV388DVI	Interface	LKV388A:HDMI LKV388DVI:DVI
	LKV388	Max. of Antenna's Gain	LKV388A:5dBi LKV388:3dBi

Notes: Testing products-the products tested by BACL
 Multiple Model- have the same appearance, structure, PCB, material and function to the testing products except the differences as above table.

Besides the differences in the table above, we guarantee all the information provided above is true, and notice that we'll bear all the consequences caused by any false information or concealing

Best Regards,

Signature: *Xie Dandan*

Print Name: Xie Dandan

Title: Manager

Add:West 4F, Jinguangxia Culture & Tech Park, 3 Guangxia Road, Shenzhen, Guangdong, 518049 China
 Email:jalen.chan@lenkeng.com Tel:+86-0755-83590136 Fax:+86-0755-82500201

***** END OF REPORT *****